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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,251	09/23/2005	Johannes Menzel	MENZEL-1 (PCT)	1892
25889 7590 09/11/2008 COLLARD & ROE, P.C. 1077 NORTHERN BOULEVARD ROSLYN, NY 11576				
EXAMINER WU, IVES J				
ART UNIT		PAPER NUMBER		
1797				
MAIL DATE		DELIVERY MODE		
09/11/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/550,251

**Applicant(s)**

MENZEL, JOHANNES

**Examiner**

IVES WU

**Art Unit**

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☒ Information Disclosure Statement(s) (PTO/SG/08)  
Paper No(s)/Mail Date 10/21/2005
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- (1). **Claims 1-7** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding **claim 1**, the phrase "like e.g." renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

The phrase "higher pressure" in **claim 1** renders the claim indefinite because the requisite degree of difference is unclear. The phrase "higher pressure" is not defined by the claim, the Specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skills in the art would not be reasonably apprised of the scope of the invention.

**Claims 2-7** are rejected because they depend on instant claim 1.

In **claim 4**, it recites "wherein directly before the 2<sup>nd</sup> absorption stage (49) a flash stage (55) is arranged". However, the flash stage (55) is after the 2<sup>nd</sup> absorption stage as illustrated in Figure of Applicant's Specification. Therefore, it is rejected for indefiniteness.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

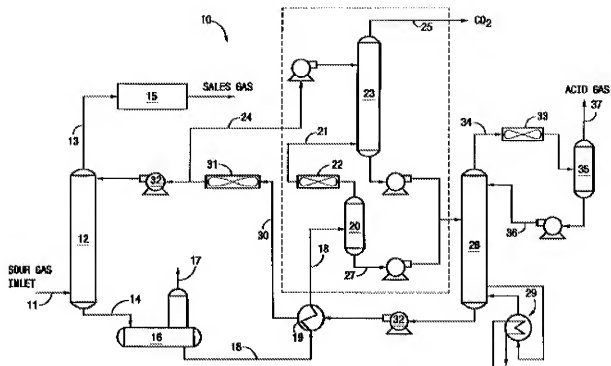
The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(2). **Claims 1 and 5-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Marjanovich et al (US05820837A), in view of Khanmamedov (US06506349B1), evidenced by Ameen (US03594985).

As to method for selective removal of hydrogen sulphides, organic sulphur components and CO<sub>2</sub> from crude gases, like e.g. mineral gas or synthesis gas by using 1<sup>st</sup> absorption stage and 2<sup>nd</sup> absorption stage for separating almost pure CO<sub>2</sub> and using a desorption stage for extracting a gas rich in hydrogen sulphide, whereby the regenerated absorbing substance from the desorption stage is again guided back to both the absorption stages in **independent claim 1**, Marjanovich et al (US05820837A) disclose process for treating a gas stream to selectively separate acid gases therefrom (Title). In particular, it relates to a sour gas treatment method which includes processing the acid gas removed from the sour gas to recover high-quality CO<sub>2</sub>, and to improve the quality (i.e. concentration of H<sub>2</sub>S) in the acid gas stream while reducing the total volume of the acid gas stream which is subsequently processed to recover sulphide (Col. 1, line 19-25). As illustrated in the Figure below which show a 1<sup>st</sup> absorber 12, 2<sup>nd</sup> absorber 23, line 25 almost substantially H<sub>2</sub>S free CO<sub>2</sub>, regeneration unit 28, acid gas exit line 34 passed from top of stripper 28, recovered in line 37, and regenerated absorbent feeds to both absorbers through line 30.



As to absorbing substance one uses a chemically non-active solvent in **independent claim 1**, Marjanovich et al (US05820837A) disclose solvent of an organic amine (Abstract, line 2). More specifically, the solvent is preferably a liquid amine mixture which is basically comprised of approximately 50% MDEA and 50% of water (Col. 4, line 27-29). Marjanovich et al **do not teach** the use of a chemically non-active solvent as claimed.

However, Khanmamedov (US06506349B1) **teaches** process for removal of contaminants from gas stream (Title). A selected contaminant is removed from a gas stream containing an unselected component that is also absorbed by the solvent, although a lesser degree than the selected contaminant (Abstract, line 1-4). Either physical solvents, such as water, propylene carbonate or methyl cyanoacetate, or chemical solvents, such as monoethanol amine (MEA), diethanol amine (DEA) or N-methyldiethanol amine (MDEA) can be used for such process (Col. 4, line 4-8).

In view of substantially identical solvents MDEA and physical solvent disclosed by Khanmamedov for acid gas removal. It would have been obvious at time of the invention to use the physical solvent of Khanmamedov instead of organic amine in the process of Marjanovich et

al based on their interchangeability as recognized functional equivalence as solvent in acid gas removal process.

As to the absorption agent enriched with hydrogen sulphide, organic sulphur compounds and CO<sub>2</sub> and coming out of the 1<sup>st</sup> absorption stage to find itself at an increased pressure between the pressure of absorption column and the pressure of the desorption column in method in **independent claim 1**, as shown in the Figure 1, the rich solvent from the contactor vessel 12 in the line 14 would inherently having a increased pressure between the pressure of absorption column and the pressure of the desorption column.

As to step of being preheated with hot-regenerated solution coming from the desorption stage in a heat exchanger in method in **independent claim 1**, as shown in the Figure above, the heater 19, regenerated solution line 30, which read on the limitation of instant claim.

As to step of being de-stressed at a selected higher pressure in a high pressure flash container in method in **independent claim 1**, as shown in Figure above, the flash tank 20 which is operated at very low pressure (e.g. less than about 25 psig) (Col. 4, line 65-67) which is also used as high pressure flash tank as evidenced by Ameen (US03594985) the high pressure flash tank 7 operating at pressure of 25 to 600 psia (Col. 4, line 40-41).

As to whereby the gas flow released at the increased temperature being cooled in a condenser and then guided to the 2<sup>nd</sup> absorption stage in which the sulphur components are completely removed with the help of the part-flow the regenerated absorption agent coming from the desorption stage in method in **independent claim 1**, as shown in Figure above, the cooler 22 and line 21 to the 2<sup>nd</sup> absorber 23, and part-flow of regenerated absorbent line 30, CO<sub>2</sub> exit line 25 (substantially H<sub>2</sub>S free) which read on the limitations of instant claim.

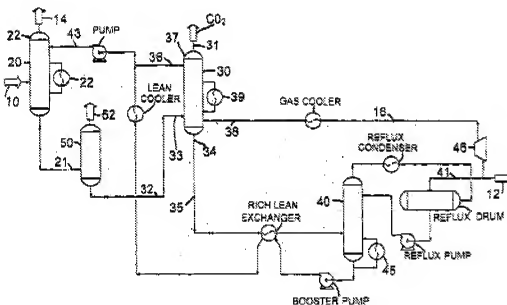
As to the absorption agent being guided back out of the 2<sup>nd</sup> absorption stage into the desorption stage in method in **independent claim 1**, as shown in Figure above, at bottom of 2<sup>nd</sup> absorber, one line (not numbered) is guided to stripper 28.

As to absorption taking place at an operating pressure of 10 to 150 bars in **claim 5**, Marjanovich et al (US05820837A) disclose high pressure contact vessel (i.e. about 800-1200 psig) (Col. 3, line 25).

As to the temperature of enriched absorption agent coming from the absorber to be increased to 50 to 200 °C in **claim 6**, Marjanovich et al (US05820837A) disclose high pressure contact vessel at 50 to 120 °F (Col. 3, line 25).

(3). **Claim 2** is rejected under 35 U.S.C. 103(a) as being unpatentable over Marjanovich et al (US05820837A), in view of Khanmamedov (US06506349B1), further in view of Palmer (US07147691B2).

As to the charged absorption substance being heated after the 2<sup>nd</sup> absorption stage and before entering into the desorption stage whereby the heating takes place in indirect heat exchanger with the absorption substance flow coming from the desorption stage in **claim 2**, Marjanovich et al (US05820837A) **do not teach** the indirect heat exchanger after the 2<sup>nd</sup> absorption stage as claimed.



However, Palmer (US07147691B2) **teaches** acid gas enrichment process (Title). As illustrated in the Figure below which show an indirect RICH/LEAN heat exchanger after the 2<sup>nd</sup> absorber 30 before the regeneration column 40.

The advantage of RICH/LEAN heat exchanger is to cool the lean stream absorber after leaving the regenerator (Col. 15, line 24-27) and to heat the stream coming out from the 2<sup>nd</sup> absorber 30 for better separation in the regenerator as well known in the art.

Therefore, it would have been obvious at time of the invention to install the indirect heat exchanger of Palmer in between the 2<sup>nd</sup> absorber and regenerator in the process of Marjanovich in order to attain the advantage as cited above.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IVES WU whose telephone number is (571)272-4245. The examiner can normally be reached on 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Examiner: Ives Wu

Art Unit: 1797

Date: September 4, 2008

/Duane S. Smith/  
Supervisory Patent Examiner, Art Unit 1797  
9-5-08